

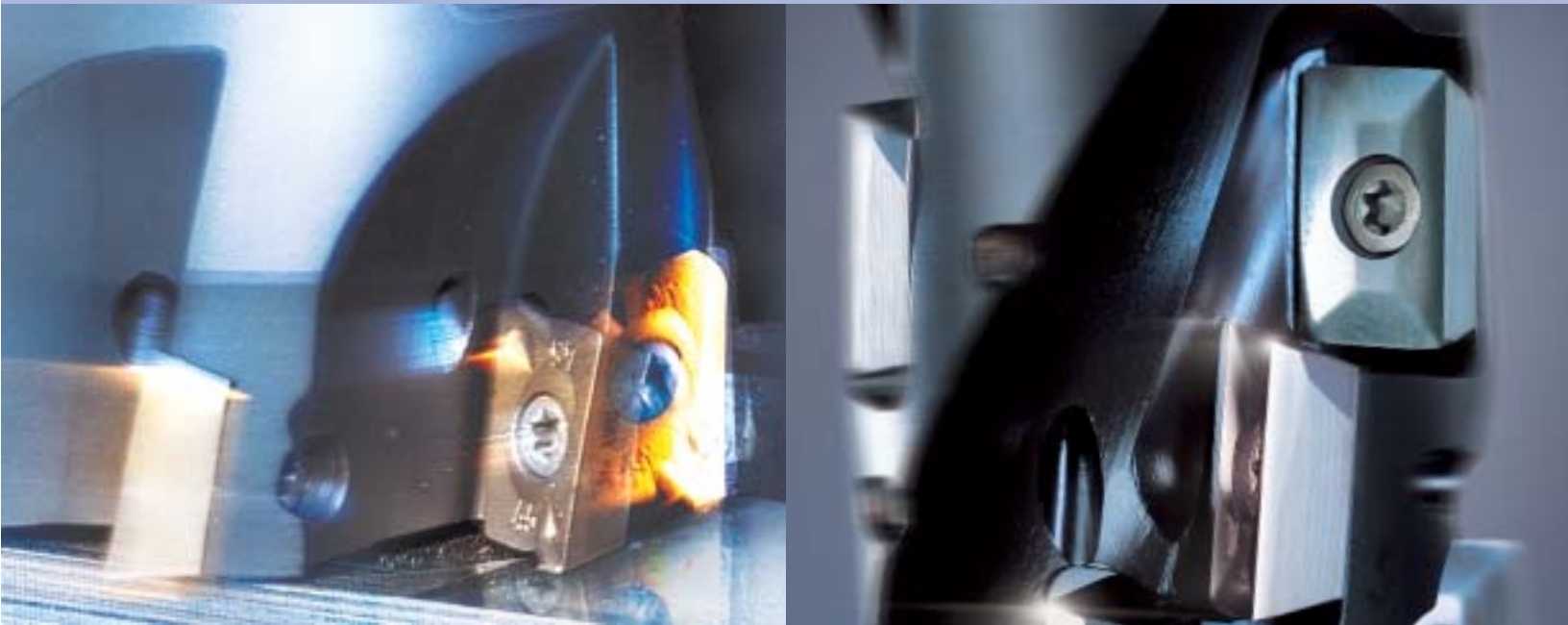
**STELLRAM**

TM

**New!**

# PowerMill90™

7690 VA 12/  
5315 VA 12



## THE TOOLING

- 90° Milling – 7690 VA12 / 5315 VA 12.

## THE MATERIAL

- Steels, stainless steels, cast irons, aluminum and alloys and high temperature alloys.

## THE APPLICATION

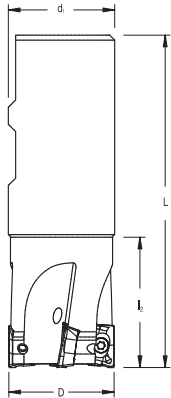
- Shoulder milling, slotting and pocketing.

## PERFORMANCE FEATURES

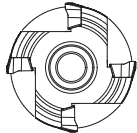
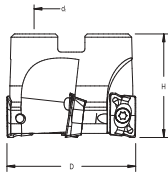
- High metal removal capability and excellent surface finish.
- Thicker inserts provide high feed rates and greater security.
- Positive soft cutting geometry for better power utilization.
- 90° approach angle for accurate shoulder, slot and pocket milling.
- Long edge version with full effective flutes for heavy metal removal.

Stellram® tooling systems for all your milling requirements.

# 7690 VA 12 Milling Cutter



Weldon Shank



Shell Mill Fixation



Depth of Cut ( $a_p$ )

## 7690 VA 12 Weldon Shank Coarse Pitch

EDP #	Part Number	Dimensions (inch)						No. of Inserts	Spares			
		D	L/H	$l_2$	$d_1$	$a_{max}$	EDP#		Screw	EDP#	Driver	
027935	C7690VA12WA.750Z02R1.37	0.75	3.40	1.37	0.750	0.433	2	027860	F3007T	022157	T8	
027936	C7690VA12WA1.00Z02R1.60	1.00	3.90	1.60	1.000	0.433	2	027860	F3007T	022157	T8	
027937	C7690VA12WA1.25Z03R1.60	1.25	3.90	1.60	1.250	0.433	3	027860	F3007T	022157	T8	
027938	C7690VA12WA1.50Z04R2.03	1.50	4.33	2.03	1.250	0.433	4	027860	F3007T	022157	T8	

## 7690 VA 12 Weldon Shank Fine Pitch

EDP #	Part Number	Dimensions (inch)						No. of Inserts	Spares			
		D	L/H	$l_2$	$d_1$	$a_{max}$	EDP#		Screw	EDP#	Driver	
027939	C7690VA12WA1.00Z03R1.60	1.00	3.90	1.60	1.000	0.433	3	027860	F3007T	022157	T8	
027940	C7690VA12WA1.25Z04R1.60	1.25	3.90	1.60	1.250	0.433	4	027860	F3007T	022157	T8	
027941	C7690VA12WA1.50Z05R2.03	1.50	4.33	2.03	1.250	0.433	5	027860	F3007T	022157	T8	

## 7690 VA 12 Shell Mill Fixation Coarse Pitch

EDP #	Part Number	Dimensions (inch)						No. of Inserts	Spares			
		D	L/H	$l_2$	$d_1$	$a_{max}$	EDP#		Screw	EDP#	Driver	
027945	C7690VA12-A1.50Z04R	1.50	1.26	-	0.500	0.433	4	027860	F3007T	022157	T8	
027946	C7690VA12-A2.00Z05R	2.00	1.57	-	0.750	0.433	5	027860	F3007T	022157	T8	
027947	C7690VA12-A2.50Z06R	2.50	1.57	-	0.750	0.433	6	027860	F3007T	022157	T8	
027948	C7690VA12-A3.00Z07R	3.00	1.97	-	1.000	0.433	7	027860	F3007T	022157	T8	

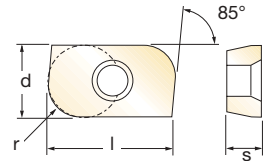
## 7690 VA 12 Shell Mill Fixation Fine Pitch

EDP #	Part Number	Dimensions (inch)						No. of Inserts	Spares			
		D	L/H	$l_2$	$d_1$	$a_{max}$	EDP#		Screw	EDP#	Driver	
027949	C7690VA12-A1.50Z05R	1.50	1.26	-	0.500	0.433	5	027860	F3007T	022157	T8	
027950	C7690VA12-A2.00Z06R	2.00	1.57	-	0.750	0.433	6	027860	F3007T	022157	T8	
027951	C7690VA12-A2.50Z08R	2.50	1.57	-	0.750	0.433	8	027860	F3007T	022157	T8	
027952	C7690VA12-A3.00Z09R	3.00	1.97	-	1.000	0.433	9	027860	F3007T	022157	T8	

# 7690 VA 12

Milling Cutter order example: **C7690VA12-A1.50Z05R**  
 Milling Insert order example: **ADKT12T3PDER-45 SP6564**

# Inserts for 7690 VA 12



EDP#	Part Number	Grade	Application & Material			Dimensions (inch)				
			Roughing	Semi-Finishing	Finishing	d	l	s	r	h <sub>m</sub> min
027915	ADKT12T3PDER-45	MP91M	◆	◆	◆	0.309	0.500	0.156	Facet	0.003
027916	ADKT12T3PDER-45	SC3025	◆	◆	◆	0.309	0.500	0.156	Facet	0.003
027914	ADKT12T3PDER-45	SP6564		◆	◆	0.309	0.500	0.156	Facet	0.003
027913	ADKT12T3PDER-45	X500	◆			0.309	0.500	0.156	Facet	0.003



029098	ADGT12T3PDFR-721	GH1	◆	◆	◆	0.309	0.500	0.156	Facet	0.0015
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029328	ADHT12T308ER-46	SP6564		◆◆◆	◆◆◆	0.309	0.500	0.156	0.031	0.002
029329	ADHT12T308ER-46	X500	◆◆◆			0.309	0.500	0.156	0.031	0.002
029330	ADHT12T316ER-46	SP6564		◆◆◆	◆◆◆	0.309	0.500	0.156	0.063	0.002
029331	ADHT12T316ER-46	X500	◆◆◆			0.309	0.500	0.156	0.063	0.002
029336	ADHT12T320ER-46	SP6564		◆◆◆	◆◆◆	0.309	0.500	0.156	0.079	0.002
029337	ADHT12T320ER-46	X500	◆◆◆			0.309	0.500	0.156	0.079	0.002
029332	ADHT12T324ER-46	SP6564		◆◆◆	◆◆◆	0.309	0.500	0.156	0.094	0.002
029333	ADHT12T324ER-46	X500	◆◆◆			0.309	0.500	0.156	0.094	0.002
029338	ADHT12T330ER-46	SP6564		◆◆◆	◆◆◆	0.309	0.500	0.156	0.118	0.002
029339	ADHT12T330ER-46	X500	◆◆◆			0.309	0.500	0.156	0.118	0.002
029037	ADHT12T332ER-46	SP6564		◆◆◆	◆◆◆	0.309	0.500	0.156	0.125	0.002
029036	ADHT12T332ER-46	X500	◆◆◆			0.309	0.500	0.156	0.125	0.002
029334	ADHT12T340ER-46	SP6564		◆◆◆	◆◆◆	0.309	0.500	0.156	0.157	0.002
029335	ADHT12T340ER-46	X500	◆◆◆			0.309	0.500	0.156	0.157	0.002
029326	ADHT12T3PDER-46	SP6564		◆◆◆	◆◆◆	0.309	0.500	0.156	Facet	0.002
029327	ADHT12T3PDER-46	X500	◆◆◆			0.309	0.500	0.156	Facet	0.002



If insert radius is over 0.063", the insert pocket on our standard cutters must be modified.

## AD\_12 Recommended Cutting Conditions

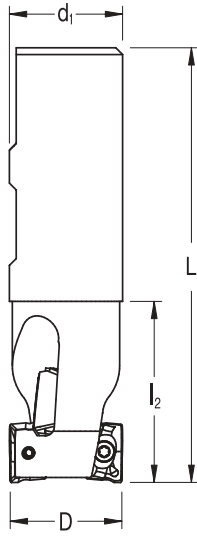
Material	▼ Roughing Feed			▼▼ Semi-Finishing Feed			▼▼▼ Finishing Feed		
	Speed V <sub>C</sub> (feet/min)	f <sub>z</sub> (feed/tooth)	D.O.C. a <sub>p</sub> (inch)	Speed V <sub>C</sub> (feet/min)	f <sub>z</sub> (feed/tooth)	D.O.C. a <sub>p</sub> (inch)	Speed V <sub>C</sub> (feet/min)	f <sub>z</sub> (feed/tooth)	D.O.C. a <sub>p</sub> (inch)
◆ Unalloyed Steels	400 - 740	0.003 - 0.006	0.276-0.433	680 - 850	0.003 - 0.008	0.098-0.276	750 - 1000	0.003 - 0.010	0.008-0.098
◆ Alloyed Steels	250 - 450	0.003 - 0.006	0.276-0.433	400 - 500	0.003 - 0.008	0.098-0.276	400 - 525	0.003 - 0.010	0.008-0.098
◆ Stainless Steels	375 - 525	0.003 - 0.007	0.276-0.433	410 - 655	0.003 - 0.007	0.098-0.276	490 - 885	0.003 - 0.007	0.008-0.098
◆ PH Stainless	310 - 490	0.000 - 0.007	0.276-0.433	375 - 590	0.003 - 0.007	0.098-0.276	410 - 785	0.003 - 0.007	0.008-0.098
◆ Cast Irons	500 - 920	0.003 - 0.006	0.276-0.433	750 - 1025	0.003 - 0.007	0.098-0.276	900 - 1200	0.003 - 0.008	0.008-0.098
◆ Aluminum & Alloys	655 - 2625	0.002 - 0.006	0.276-0.433	985 - 3935	0.002 - 0.007	0.098-0.276	1310 - 5250	0.002 - 0.008	0.008-0.098
◆ High Temp. Alloys	80 - 130	0.002 - 0.004	0.276-0.433	100 - 165	0.002 - 0.005	0.098-0.276	100 - 195	0.002 - 0.006	0.008-0.098
◆ Hard Steels (52-56 HRC)	-	-	-	-	-	-	-	-	-

### Star Guide Key to Recommended Inserts

Material Designations					
	<b>P</b> ◆ Unalloyed Steels	<b>M</b> ◆ Stainless Steels	<b>K</b> ◆ Cast Irons	<b>S</b> ◆ High Temp. Alloys	
	<b>P</b> ◆ Alloyed Steels	<b>M</b> ◆ PH Stainless	<b>N</b> ◆ Aluminum & Alloys	<b>H</b> ◆ Hard Materials	



# 5315 VA 12 Milling Cutter



Weldon Shank

## 5315 VA 12 Weldon Shank

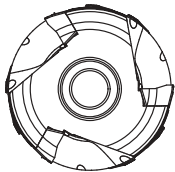
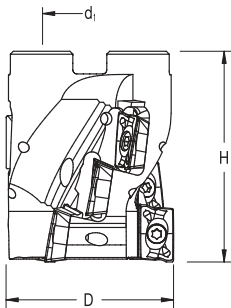
EDP #	Part Number	Dimensions (inch)								Spares			
		D	L/H	$a_p$ max. Profiling	$a_p$ max. Slotting	$l_2$	$d_1$	Z	No. of flutes	EDP #	EDP #		
029349	<b>C5315VA12WA1.00R0.9</b>	1.000	3.85	0.900	0.591	1.570	1.000	4	2	027860	F3007T	022157	T8
029350	<b>C5315VA12WA1.00R1.37</b>	1.000	4.28	1.370	0.276	2.000	1.000	6	2	027860	F3007T	022157	T8
029351	<b>C5315VA12WA1.25R1.37</b>	1.250	4.28	1.370	0.787	2.000	1.250	9	3	027860	F3007T	022157	T8
029352	<b>C5315VA12WA1.50R1.77</b>	1.500	5.04	1.770	0.787	2.350	1.500	12	3	027860	F3007T	022157	T8

## 5315 VA 12 Shell Mill Fixation

029353	<b>C5315VA12-A1.50R1.33</b>	1.500	2.000	1.330	0.787	-	0.750	9	3	027860	F3007T	022157	T8
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Please note that a maximum of 0.031" insert radius is allowed on the 5315VA12 range of cutters. Larger radii inserts can be used on the leading edge if the body is modified. For inserts, see next page.

**NOTE:** For stainless steels, PH stainless steels and high temperature alloys, the 46 geometry should only be used for profiling.



Shell Mill Fixation

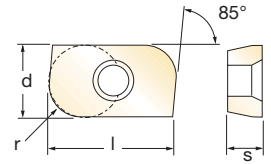
## 5315 VA 12

Milling Cutter Order Example: **C5315VA12WA1.00R0.9**  
 Milling Insert Order Example: **ADKT12T3PDER-45 SC3025**



Depth of Cut (a)

# Inserts for 5315 VA 12



EDP #	Part Number	Grade	Application & Material			Dimensions (inch)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h <sub>m</sub> min
027914	ADKT12T3PDER-45	SP6564				0.309	0.500	0.156	Facet	0.003
027913	ADKT12T3PDER-45	X500	◆			0.309	0.500	0.156	Facet	0.003
027915	ADKT12T3PDER-45	MP91M	◆			0.309	0.500	0.156	Facet	0.003
027916	ADKT12T3PDER-45	SC3025	◆			0.309	0.500	0.156	Facet	0.003
029098	ADGT12T3PDFR-721	GH1	◆			0.309	0.500	0.156	Facet	0.0015
029326	ADHT12T3PDER-46	SP6564	◆			0.309	0.500	0.156	Facet	0.002
029327	ADHT12T3PDER-46	X500	◆◆			0.309	0.500	0.156	Facet	0.002
029328	ADHT12T308ER-46	SP6564	◆			0.309	0.500	0.156	0.031	0.002
029309	ADHT12T308ER-46	X500	◆◆			0.309	0.500	0.156	0.031	0.002



Please note that for the 5315 range, only a maximum 0.031" radius is allowed.

## AD\_12 Recommended Cutting Conditions

Material	▼ Roughing			▼▼ Semi-finishing			▼▼▼ Finishing		
	Speed V <sub>C</sub> (SFM)	Feed f <sub>z</sub> (IPT)	D.O.C a <sub>p</sub> (in)	Speed V <sub>C</sub> (SFM)	Feed f <sub>z</sub> (IPT)	D.O.C a <sub>p</sub> (in)	Speed V <sub>C</sub> (SFM)	Feed f <sub>z</sub> (IPT)	D.O.C a <sub>p</sub> (in)
◆ Unalloyed Steels	395 - 1000	0.002 - 0.005	See I <sub>1</sub>	-	-	-	-	-	-
◆ Alloyed Steels	245 - 525	0.002 - 0.004	See I <sub>1</sub>	-	-	-	-	-	-
◆ Stainless Steels	410 - 870	0.002 - 0.004	See I <sub>1</sub>	-	-	-	-	-	-
◆ PH Stainless	160 - 335	0.002 - 0.004	See I <sub>1</sub>	-	-	-	-	-	-
◆ Cast Irons	400 - 1300	0.002 - 0.005	See I <sub>1</sub>	-	-	-	-	-	-
◆ Aluminum & Alloys	655 - 5250	0.002 - 0.008*	See I <sub>1</sub>	-	-	-	-	-	-
◆ High Temp. Alloys	80 - 195	0.002 - 0.004	See I <sub>1</sub>	-	-	-	-	-	-
◆ Hard Steels (52-56 HRC)	-	-	-	-	-	-	-	-	-

\*For 1" diameter cutters, the maximum feed rate is 0.006".

**NOTE:** For stainless steels, PH stainless steels and high temperature alloys, the 46 geometry should only be used for profiling.






## Star Guide Key to Recommended Inserts

Material Designations			
	<b>P</b> ◆ Unalloyed Steels	<b>M</b> ◆ Stainless Steels	<b>K</b> ◆ Cast Irons
	<b>P</b> ◆ Alloyed Steels	<b>M</b> ◆ PH Stainless	<b>N</b> ◆ Aluminum & Alloys
			<b>S</b> ◆ High Temp. Alloys
			<b>H</b> ◆ Hard Materials



# Technical Data:

## ISO Grade Chart

Materials	Code	Coated					Micro-grain Uncoated
		CVD			PVD		
		HC MP91M	HC X500	HC SC3025	HC SP6564	HF GH1	
 Unalloyed and Alloyed Steels <b>P</b>	C8	P01					
		P05					
	C7	P10					
		P15					
		P20					
		P25					
	C6	P30					
		P35					
	C5	P40					
		P50					
 Stainless Steels <b>M</b>		M05					
		M10					
		M15					
		M20					
		M30					
		M35					
		M40					
 Cast Irons <b>K</b>	C4	K01					
		K05					
	C3	K10					
		K15					
	C2	K20					
		K25					
	C1	K30					
		K35					
		K40					
	 Aluminum & Alloys <b>N</b>		N01				
		N05					
		N10					
		N15					
		N20					
		N25					
		N30					
 High Temperature Alloys <b>S</b>		S01					
		S05					
		S10					
		S15					
		S20					
		S25					
		S30					

**New!**

- **MP91M:** For use on steels and alloyed steels. This grade is recommended every time wear characteristics are more important than toughness.
- **X500:** Premium grade for use in difficult conditions and low cutting speeds.
- **SC3025:** The 1st choice grade for all cast iron applications.
  - Excellent wear and abrasion resistance offers greater tool life.
  - 25% - 50% longer tool life than the competition in laboratory and field tests.
- **SP6564:** Recommended for stainless steels and high temperature alloys, in either higher speed or dry machining applications.
- **GH1:** Micrograin grade for machining aluminum. The grade performs equally well with or without coolant.

## Case study:

### PowerMill90

Part: **Plate**  
 Tool: **C7690VA12-A2.00Z06R**  
 Insert: **ADKT12T3PDER-45 X500**  
 Material: **Unalloyed Steels**

Results:	Competition	<b>Stellram</b>
Speed (feet/min):	470 SFM	<b>630 SFM</b>
DOC:	0.118"	<b>0.236"</b>
Feedrate:	21 IPM	<b>36 IPM</b>
Feed per Tooth:	0.004"	<b>0.005"</b>
Results:	2 components per Insert	<b>12</b>



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